



INTELLECT

Exploring Technologies, Advancing Innovation



FALL PROTECTION EQUIPMENT TESTING LABORATORY (FPETL)

A SUCCESS STORY: UNIVERSITY OF CYBERJAYA ACHIEVES GLP CERTIFICATION FOR ITS TEN LABS

INTRODUCTION

Welcome to the June 2024 edition of INTELLECT, the quarterly magazine of NIOSH that explores technologies and advances innovation in the field of Occupational Safety and Health (OSH). Intellect is a platform for exchanging information, sharing knowledge and experiences and highlighting the latest developments and achievements of NIOSH and its partners. Intellect aims to benefit all the stakeholders in the OSH community, including research institutes, laboratory service providers, universities, academicians, government and private sectors, employers and students.

We hope that Intellect will inspire and inform you about the exciting and important works that NIOSH and its partners are doing to enhance OSH standards and practices in Malaysia and beyond. We also welcome other organisations who are interested in promoting or sharing their laboratory facilities and services in the field of OSH. We welcome your feedback and suggestions on how to improve our magazine and services. We would love to hear from you and feature your contributions in our future issues.

If you have any stories, projects, or achievements that you would like to showcase in our magazine, please feel free to contact us at penerbitan@niosh.com.my. Thank you for your support and interest in NIOSH. We look forward to hearing from you and serving you better.



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FALL PROTECTION EQUIPMENT TESTING LABORATORY (FPETL)

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 Muhammad Hairul Farique bin Mohd Fuadi
 Mohd Fadzli bin Ismail

1.1 INTRODUCTION TO FALL PROTECTION EQUIPMENT TESTING LABORATORY (FPETL)

The idea of establishing a Fall Protection Equipment Testing Laboratory (FPETL) initially began with a courtesy visit from the National Institute of Occupational Safety and Health (NIOSH) Malaysia to the Korea Occupational Safety and Health Agency (KOSHA), in the Republic of Korea. Under the Eleventh Malaysia Plan (11MP), NIOSH Malaysia was tasked to develop a testing laboratory that Malaysian employers could utilise to test and provide fall protection equipment that adhered to pertinent standards including the British and European Nations (BS EN) Standards and the Malaysian Standards (MS). Consequently, the construction of the FPETL began in June 2017 and was officially completed in August 2018. There are three main goals for establishing FPETL:

1. To provide services such as testing and certification for fall protection equipment and components used by industries;
2. To ensure and endorse that all fall protection equipment and components comply with Malaysian Standards (MS) as well as other international technical standards such as European Standard recommended by the manufacturer; and
3. To provide services and facilities for research and development (R&D) related to fall protection equipment.

1.2 WHAT DOES FPETL DO?

FPETL is fully equipped with three main facilities, namely:

- i. static strength testing room,
- ii. climatic testing room, and
- iii. dynamic performance testing tower.



Figure 1.0 Deputy Minister of Human Resources accompanied by NIOSH Vice Chairman and NIOSH Executive Director made an official visit to FPETL.

FPETL has conducted a research entitled “Study of fall protection equipment’s compliance to the MS standard”. One of the findings showed that only 60% of common brands available in the Malaysian market are MS compliant. This raises questions about the remaining 40%. In addition, the results showed that 18% of full-body harnesses, 50% of lanyards, 7% of connectors and 20% of energy absorbers were found inappropriate for usage (NIOSH, 2017). This is a major concern for the equipment’s reliability and integrity while in use, as the safety of working at height is highly dependent on the performance of the equipment. It is recommended that NIOSH, through the FPETL, collaborates with the Department of Safety and Health (DOSH) Malaysia as the enforcer, SIRIM Berhad as the Certification Body, and suppliers/ manufacturers to ensure that every personal protective equipment against falls from height supplied to the Malaysia market are verified accordingly.

Currently, our testing facilities meet the Malaysian standard and international standards such as the BS EN Standards. The Standards are as follows:

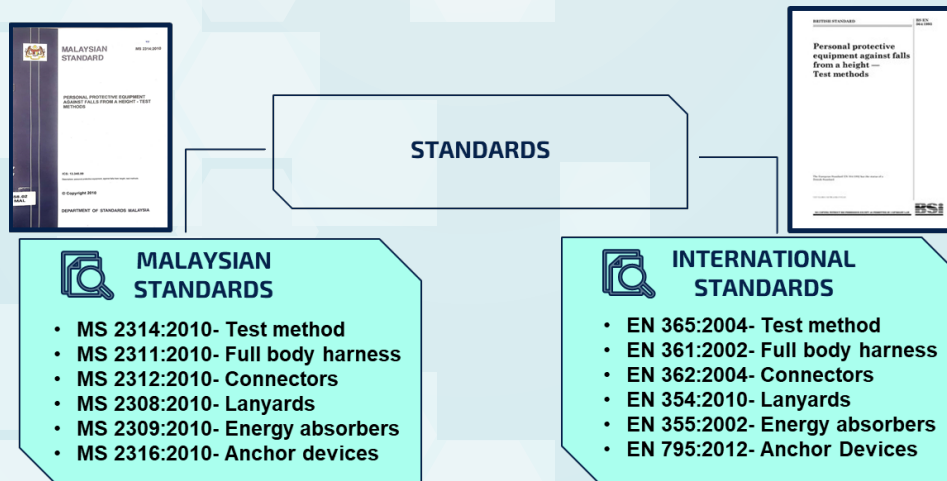




Figure 1.1 Static strength room, dynamic performance tower, and conditioning room

Since then, FPETL has received requests from more than 10 companies/ total projects such as JF Building Tech Sdn Bhd, PDS Safety Sdn Bhd, Top Slings Trading Sdn Bhd, MSA Safety Malaysia Sdn Bhd, HVT Engineering Sdn Bhd, Yeowchuan Hardware Sdn Bhd, 3M Malaysia Sdn Bhd, Further Advance Industries Sdn Bhd, Safetyware Sdn Bhd and Firatel Sdn Bhd. Examples of fall protection equipment brands sent to FPETL for testing are A-stabil, Worksafe, Workgard, BST, HT, Dbi-Sala, MSA, FA, Safetyware and Ptetgrd.

inspection course for Personal Protective Equipment (PPE) was conducted from 7 to 9 June 2022. Laboratory Advisor, Ts. Haji Mohd Esa bin Haji Baruji, FPETL Technical Officer Mr. Muhammad Hairul Farique bin Mohd Fuadi and FPETL Senior Technician Mr. Mohd Fadzli bin Ismail attended the course. The three successfully passed the assessment conducted during the training and qualified as competent person namely PPE Verifier and Inspector for protection against falls from height.

1.3 IS TECHNICAL TRAINING PROVIDED?



Five NIOSH Malaysia employees were sent for training in Ulsan, Republic of Korea, from September 25 to 27, 2017, in collaboration with Korea Occupational Safety and Health Agency (KOSHA), to ensure the team's credibility and competence. Consequently, a representative from each of NIOSH Malaysia and NIOSH Certification Sdn Bhd attended the fellowship training,

particularly for the safety certification system of Korea from October 22 to October 25, 2019, as part of the FPETL's capacity-building efforts.

A few series of training programmes were conducted in 2019 to enhance the quality of laboratory management system such as:

1. Understanding the Implementation of ISO/IEC 17025:2017,
2. General Requirement for the Competency Testing and Calibration of Laboratories,
3. Calibration of Force Measurement Device,
4. Measurement Uncertainty Evaluation of Force Calibration, and
5. Method Validation and Verification.

In addition, to enhance the skills of the FPETL personnel, an



Figure 1.2 FPETL personnel attended the PPE inspection and verification course (Picture: During assessment session)

1.4 WHAT IS FPETL ACTIVITY?

Besides conducting testing, FPETL is also involved in various activities of the institute, such as educating and disseminating related fall protection equipment and technical information as shown in figure 1.3.



Figure 1.3 1) Static strength test for connector, 2) Static strength test for full body harness, 3) Dynamic performance test for the full body harness

FPETL is also designing many infographic materials to enhance public awareness and understanding of the industry regarding basic fall protection equipment and the importance of testing in real-life occupations. Below are a few examples of the infographics available on the NIOSH website.

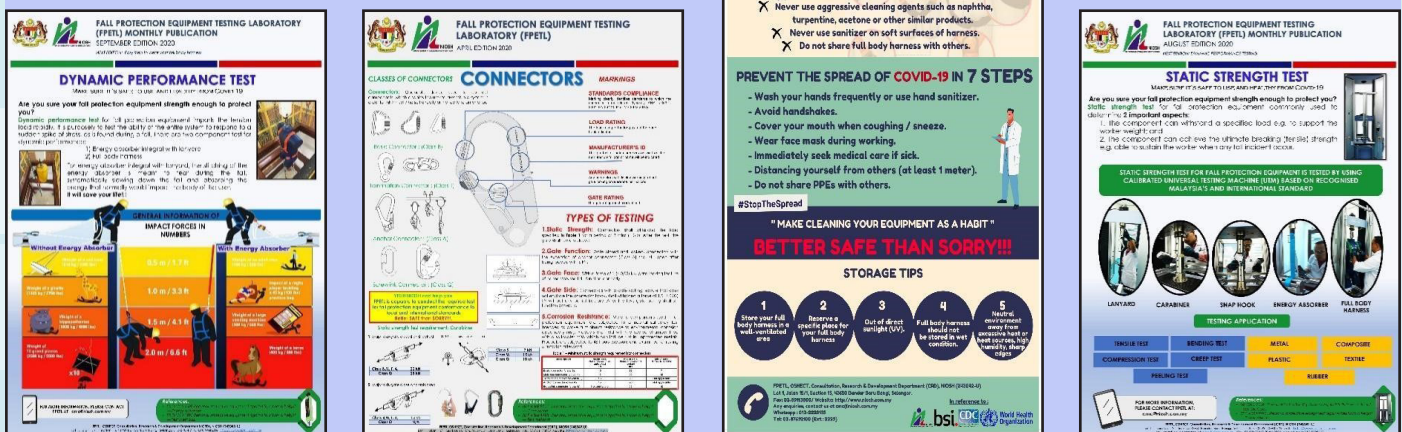


Figure 1.4 Infographics

FPETL is also involved in information dissemination activities such as Free OSH Talk organised by the Information Dissemination Division (IDD) of NIOSH and utilising the social media channels managed by Information Technology Division of NIOSH for the industry's benefits, as shown below:

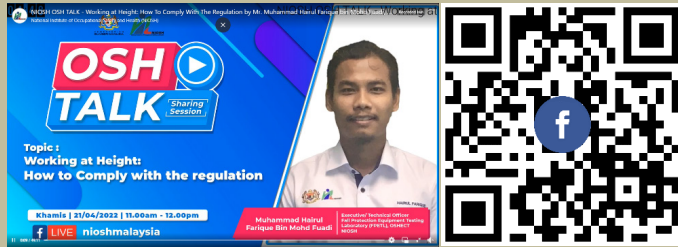


Figure 1.5 NIOSH FB Live - "Working at Height: How to comply with the regulation"

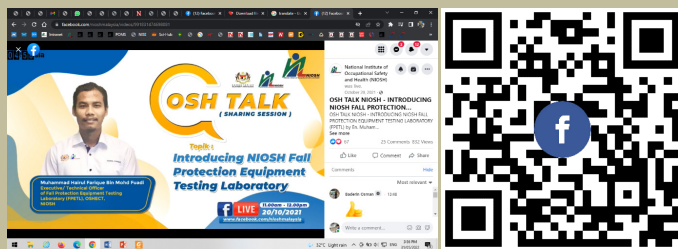


Figure 1.6 NIOSH FB Live - "Introducing NIOSH Fall Protection Equipment Testing Laboratory"



Figure 1.7 NIOSH YouTube – Introduction of Fall Protection Equipment Testing Laboratory, FPETL.

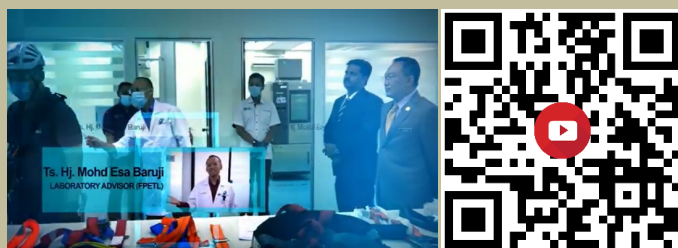


Figure 1.8 OSHECT YouTube – Fall Protection Equipment Testing Laboratory

The laboratory is accessible to members of the public, including those from the industry, academic, and education sectors. In addition, several training and seminar programmes make use of the laboratory to carry out hands-on activities and demonstrations such as follows:

1. Working safely at height;
2. Confined space trainer;
3. Authorised Gas Tester and Entry Supervisor for confined space;
4. Confined space rescue;
5. OSH Coordinator;
6. Safety and Health Officer;
7. Site Safety Supervisor;
8. Construction Safety and Health Trainer;

9. OSH seminar; and
10. OSH conference/ exhibition.



Figure 1.9 Confined space course participants visiting the laboratory.



Figure 1.10 FPETL Involvement during Malaysian "Aspirasi Keluarga Malaysia" 100-day Exhibition



Figure 1.11 Visitors from higher education institutes listening to the explanation from FPETL Approved Signatory Personnel.



Figure 1.12 FPETL team from NIOSH makes an official visit to Korea Occupational Safety and Health Agency (KOSHA) – Representatives from NIOSH (left to right): Ahmad Syaqui, Mohamad Redzuan, Tengku Hizir, Hj Shahronizam and Mohd Fadzli



Figure 1.12 FPETL team from NIOSH makes an official visit to Korea Occupational Safety and Health Agency (KOSHA) – Representatives from NIOSH (left to right): Ahmad Syauqi, Mohamad Redzuan, Tengku Hizir, Hj Shahronizam and Mohd Fadzli



Figure 1.14 Representatives of National Metrology Institute of Malaysia (NMIM) make an official visit to FPETL.



Figure 1.15 Honeywell (M) Sdn Bhd team visits FPETL at NIOSH.



Figure 1.16 FPETL team makes an official visit to Petzl (M) Sdn Bhd

1.5 ACHIEVEMENT, COLLABORATIONS AND THE WAY FORWARD

Various types of fall protection equipment are already available in the Malaysian market. However, users do not have sufficient control and ways to monitor them before usage. Hence, users' perceptions of the marking and certification, quality and safety & health features of the fall protection equipment offered by different companies vary. Therefore, FPETL has strengthened its capability through a collaboration with SIRIM QAS International on the certification process for DOSH-SIRIM PPE approval in Malaysia. This is to enhance the PPE's labelling especially fall protection equipment used by workers in Malaysia. Additionally, as one of the laboratories under OSHECT, FPETL aims to be a leading laboratory in fall protection equipment testing with a 'Safety Mark' in this region. During the Conference and Exhibition on Occupational Safety and Health (COSH) 2019, international technical cooperation has been signed between NIOSH Malaysia and the Korea Occupational Safety and Health Agency (KOSHA), Republic of Korea. NIOSH was represented by its Executive Director, Haji Ayob Bin Salleh while KOSHA was represented by its President, Dr. Park Doo Yong. On February 26, 2020, NIOSH Malaysia has signed a Memorandum of Understanding (MoU) with SIRIM Berhad. The MoU will benefit both parties, especially in facilitating technical information, technology and training.

Being an accredited laboratory registered with the Department of Standard Malaysia is a big accomplishment given the market's need for testing laboratories. As a result, FPETL has completed the procedures and is certified as an accredited testing laboratory for ISO/IEC 17025:2017 in December

2021. FPETL is one of the pioneers of the fall protection equipment testing laboratory in Malaysia. Few Asian countries such as Sri Lanka, Pakistan and Cambodia also make reference to our laboratory for technical collaboration on fall protection equipment via face-to-face, WhatsApp and email communication.

For future strategic framework, FPETL also plans to be:

1. Centre for PPE related to fall protection equipment inspection and verification. The institute will assist, advise and produce a comprehensive technical report and Certificate of Fitness for the organisation to decide on further arrangement and plans;
2. Enhance facilities to enable the testing of the complete set of fall protection equipment such as seating full body harness, retractable fall arrestor and work positioning lanyard;
3. Upgrade facilities for research and development purposes such as installing the slow motion camera, salt spray test and corrosion test as well as facilitating research officer/ assistant attachment to the laboratory;
4. Listed as one of the international proficiency testing providers for fall protection equipment; and
5. Empowering the capability of the laboratory by collaborating with national and international certification bodies such as SIRIM and BSI, and planning to be one of the appointed hubs for mechanical testing.

1.6 BIBLIOGRAPHY OF TEAM MEMBERS

TS. HJ. MOHD. ESA BIN HJ. BARUJI



FPETL Laboratory Advisor (LA)

Ts. Hj. Mohd. Esa bin Hj. Baruji is currently a Principal Consultant/ Principal Researcher at CRDD, NIOSH Malaysia since 2018. In 1997, he was awarded Bachelor of Engineering in Electronics from the University of Manchester Institute Science & Technology (UMIST), Manchester, United Kingdom. He pursued his Master in Industrial Safety Management from the National University of Malaysia in 2003. He is a registered Industrial Researcher in MyGRANTS, Ministry of Higher Education (Registration No.: 88067). His portfolio includes the following:

1. Assessment Panel for OSH Programme – Malaysia Qualifications Agency (MQA) (APP MQA No.: 2252);
2. Ex-Officio of NIOSH to Malaysian Society for Occupational Safety and Health (MSOSH) (Membership No.: 1184);
3. Professional Technologist in Manufacturing and Industrial Technology (ME) field (Certificate No.: PT20110256); and
4. Professional Technologist in Manufacturing and Industrial Technology (ME) field (Certificate No.: PT20110256).

With nearly 25 years of working experience in industry and the institute, his endless passion for OSH has inspired him to become an expert in the OSH field. He also specialised in:

1. OSH legislation compliance (e.g. process safety management, confined space risk assessment),
2. OSH solutions (e.g. development of HIRARC, risk management, safety inspection, audit, OSH management system),
3. OSH advisory (e.g. customised/ in-house training development such as Electrical Safety, Lock Out Tag Out Test Out [LOTOTO], Permit To Work [PTW], OSH Induction), and
4. Laboratory service (e.g. advisor, laboratory management representative, approved signatory, equipment calibration, testing and industrial hygiene analytical process).

He was also involved in more than 11 OSH research projects as head project and researcher with amounted value of up to more than RM7 million. He has presented and published his research findings as well as written books at the national and international seminar/ conference levels.

He has also contributed to the nation as a central committee in OSHMP2025, NCOSH, HRD Corp, NSC W, OSH Lead auditor/ panel, trainer, assessor, examiner, approved signatory, guideline & laboratory advisor, journal editorial board & review panel, expert review, panel judge, prominent writer & author, lecturer, competent person (confined space & scaffold),. He was also involved in the technical committee, working group and ex-officio during the formulation of the Malaysian Standards, Industry Code of Practices and Guidelines and National Occupational Skills Standard (NOSS) with:

1. National Council of OSH (NCOSH), DOSH, Department of Skills Development (DSD), Ministry of Human Resources,
2. SIRIM, Department of Standards Malaysia (DSM), Ministry of International Trade and Industry,
3. CIDB, Ministry of Works, and
4. MSOSH.

He has experience attending and consulting relevant OSH competency and leadership programmes in a few countries such as Japan, Germany, Saudi Arabia, Singapore, Cambodia, India and Taiwan (The Republic of China). He has presented more than 14 professional presentations at the national/ international level and published more than 29 technical papers/ books. He obtained about 6 Awards/ Copyright such as Gold Award: 32nd International Invention, Innovation & Technology Exhibition (ITEX) – Web-based School's Sports Safety Audit Tool (3SAT) CAI Model (2021), Copyright: NIOSH Anthropometric Data for Malaysian Working-Age Population (No.: CRLY2021W00339/ Category: Literature/ Application Date: 18 February 2021), Participation: Malaysian Anthropometric Measurement Tools and Portal, Ergonomics Product Design Competition (ErgoLympic) 2021, 1st Best Oral Presenter: International Sci-COSH, Johor Bahru, Malaysia with a paper entitled 'Comprehensive Occupational Safety and Health Action Plan for SMEs Utility Industry' (2016), Gold award: Development of Lubricant Oil Quality Sensor for Transportation, Research & Innovation Expo, UKM (2014), and Dean's Award: Master of Industrial Safety Management (2002/2003).

MUHAMMAD HAIRUL FARIQUE BIN MOHD FUADI



Technical Officer (TO)

Muhammad Hairul Farique bin Mohd Fuadi is a Bachelor of Mechanical Engineering holder. Currently in NIOSH as an OSH Solution Executive and Technical Officer of FPETL in Consultation, Research & Development Department (CRDD), NIOSH. He is also a Malaysian Laboratory Accreditation Scheme (SAMM) Approved signatory for FPETL. He has gone through the Safety Audit for fall protection equipment and high rope elements used by camps in Malaysia under the Ministry of Youth and Sports. He was also involved in an RM2.6 million research & development project as a research assistant and managed to produce an OSH intervention prototype (in process of pattern registration). His strong technical knowledge in the engineering field to enhance safety, especially on testing parts all over the organisation has contributed to the success of the lab.

MOHD FADZLI BIN ISMAIL



Senior Technician (ST)

Mohd Fadzli bin Ismail is one of the SAMM Approved Signatories for the Fall Protection Equipment Testing Laboratory (FPETL). He is also a trainer for the Working at Height (WAH), Authorised Entry & Standby Person (AESP), Authorised Gas Tester and Entry Supervisor for Confined Space (AGTES), OSH Coordinator and various Safety Passport courses in NIOSH as well as auditor, inspector, assessor and researcher for various of OSH programmes. Trained by KOSHA of Republic of Korea, he has served NIOSH since 2010 and is involved as a committee member for the WAH module development. He is committed to helping the industry to ensure all the safety aspects, especially for employees working at heights are in safe working conditions.

Did you know?

The Dust Mask Laboratory (DML) at NIOSH has received a certificate of appreciation from the Ministry of Health Malaysia (MOH) for their contribution and collaborative commitment in executing the Respirator Penetration Test (Standard MS2323 : 2010) during the COVID 19 Pandemic.



A SUCCESS STORY: UNIVERSITY OF CYBERJAYA ACHIEVES GLP CERTIFICATION FOR ITS TEN LABORATORIES

Prof Dr Shamima Abdul Rahman
 Member of Senate Sub Laboratory Committees
 Director of Graduate Research School
 University of Cyberjaya
 Cyberjaya, Selangor

Introduction

The University of Cyberjaya has successfully reached a significant milestone by achieving Good Laboratory Practice (GLP) certification for its ten laboratories. This prestigious certification awarded by CARE Certification International (M) Sdn. Bhd. is valid from 12th July 2023 to 11th July 2026. It underlines the university's adherence to the OECD Principles of Good Laboratory Practice, highlighting a commitment to quality, integrity, and excellence in teaching and research.

This success story details the journey towards achieving GLP certification, the standards met by these laboratories, and the anticipated impact on the university's research and academic environment.

The Journey to GLP Certification

The path to GLP certification was marked by meticulous planning, rigorous assessments, and a steadfast commitment to upholding the highest standards of laboratory practice. GLP is a stringent set of principles that ensure the quality and integrity of non-clinical laboratory studies. The university's leadership and its dedicated staff, especially the laboratory department, worked collaboratively to ensure that all necessary protocols and procedures were in place.

The general requirements that needed to be met for the GLP certifications include aspects such as comprehensive training, facilities, development and Implementation of Standard Operating Procedures (SOPs) and Quality Management Systems to monitor compliance and drive continuous improvement.

University of Cyberjaya obtained GLP certification for its ten labs which include the medical Science Laboratory 1, Cosmetic Laboratory, Molecular Research Laboratory, Chemistry Laboratory, Clean Room, Medical Science Laboratory 2, Electronics & Electrical Laboratory, Pharmaceutical Compounding Laboratory, Pharmacognosy Laboratory and Instrumentation Laboratory. The layout of each GLP laboratory is as shown in Figure 1.

All ten laboratories are used to conduct teaching and learning activities such as practical sessions, objective structured practical examination, compounding and dispensing of pharmaceutical drugs, development of electronics and electrical medical devices, extractions and investigation of medicinal plants, investigation of high-technologies analytical instrumentation and reconstitution of cytotoxic drugs. In addition, research is one of the main activities happening in these laboratories, usually related to final-year project research or postgraduate lab work research. The detailed information on these GLP laboratories and pictures are as shown in Table 1 and Figure 2.

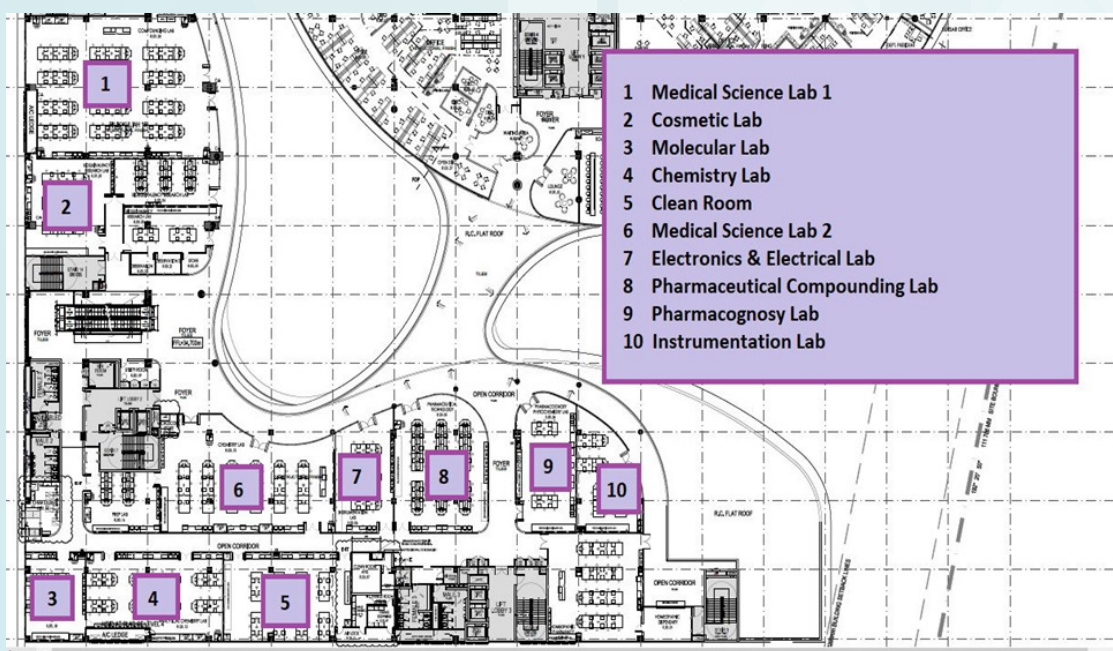


Figure 1.0 Deputy MiniFigure 1: The layout of each location of the GLP laboratories in Level 3, University of Cyberjaya

Laboratory	Type (Teaching or Research)	Size (sq. m)	Capacity (pax)
Medical Science Laboratory 1	Teaching & Research	433.5	100
Cosmetic Laboratory	Teaching & Research	134	30
Molecular Research Laboratory	Research & Teaching	88.26	20
Chemistry Laboratory	Teaching	185	50
Clean room	Teaching	188	50
Medical Science Laboratory 2	Teaching	272	70
Electronics & Electrical Laboratory	Teaching & Research	108	30
Pharmaceutical Compounding Laboratory	Teaching & Research	167	42
Pharmacognosy Laboratory	Teaching & research	132	30
Instrumentation Laboratory	Research	100	24

Table 1: List of University of Cyberjaya GLP laboratories with their type, size and capacity information



2a) Medical Science Laboratory 1



2b) Cosmetic Laboratory



2c) Molecular Research Laboratory



2d) Chemistry Laboratory



2e) Clean Room



2f) Medical Science Laboratory 2



2g) Electrics & Electronics Laboratory



2h) Pharmaceutical Compounding Laboratory



2i) Pharmacognosy Laboratory



2j) Instrumentation Laboratory

Figure 2(a – j): Pictures from University of Cyberjaya GLP labs

Standards Met by University of Cyberjaya Labs

The certification process involved a thorough evaluation of various aspects of laboratory operations, ensuring compliance with GLP standards through meticulous records of all laboratory documents that are traceable and accountable. The efficient management practices are reflected by the management organizational chart and all laboratory staff continuously trained to maintain and improve their skills. Besides, the implementation of comprehensive and rigorous SOPs for all laboratory activities and facilities and equipment available meet the requirements. Regular internal audits are also conducted to ensure ongoing compliance and continuous improvement leading to this current success.

Impact on Research and Academic Environment

The succession of this GLP certification has significantly produced an impact on various facets of the University of Cyberjaya's research and academic activities. The certification led to higher quality and more reliable research outputs and enhancing the university's reputation in the academic community.

With GLP-certified labs, the university is better positioned to attract national and international research collaborations, opening doors to more funding opportunities and joint projects.

Students will benefit from hands-on training in GLP-compliant labs, equipping them with valuable skills and experience that meet industry standards. The certification will positively impact the university's Malaysian Research Assessment (MyRA) scores, reflecting its commitment to maintaining high research standards.

Conclusion

The GLP certification awarded to ten research labs at the University of Cyberjaya marks a significant milestone in the university's journey towards research excellence. The university is dignified to leverage this certification to foster greater research collaboration, improve training for students, and achieve higher research output and impact. Moving forward, the University of Cyberjaya is set to strengthen its role as a leader in the global research community, contributing to scientific advancements and societal well-being.

By continuing to adhere to the rigorous standards required for GLP certification, the University of Cyberjaya reaffirms its commitment to producing reliable, high-quality research that can stand up to scrutiny on the world stage. This accomplishment not only enhances the credibility of the university's research labs but also contributes significantly to its overall mission of academic and research excellence.



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